CLAIMS

1. Method for detecting leaks in respiratory gas supply systems, in which both the pressure of the respiratory gas and the volume flow of the respiratory gas are detected and fed into an evaluation unit, characterized by the fact that the respiratory quantities pressure and flow are recorded by the evaluation unit for at least two successive respiratory cycles, that at least one control parameter with different signal amplitudes is preset for the successive respiratory cycles, and that resistance, compliance, and leak resistance are determined from the resulting differential curves of pressure and flow for these respiratory cycles.

2. Method in accordance with Claim 1, characterized by the fact that the computation is performed for at least two immediately successive respiratory cycles.

3. Method in accordance with Claim 1, characterized by the fact that the computation is performed for at least two respiratory cycles that are separated by at least one other respiratory cycle.

4. Method in accordance with any of Claims 1 to 3, characterized by the fact that different pressure levels are preset for the successive inspirations.

5. Method in accordance with Claim 4, characterized by the fact that the first pressure level is selected higher than the second pressure level.

6. Method in accordance with Claim 4, characterized by the fact that the first pressure level is selected lower than the second pressure level.

7. Method in accordance with any of Claims 1 to 6, characterized by the fact that different volume flows are preset for the successive respiratory cycles.

8. Method in accordance with Claim 7, characterized by the fact that the first volume flow is preset higher than the second volume flow.

9. Method in accordance with Claim 7, characterized by the fact that the first volume flow is preset lower than the second volume flow.

10. Method in accordance with any of Claims 1 to 9, characterized by the fact that a large number of respiratory cycles, each with a varied control parameter, are carried out in

such a way that the values of the control parameters are statistically distributed in such a way that a mean value corresponds to a preset desired value for the control parameter.

11. Method in accordance with any of Claims 1 to 10, characterized by the fact that a leak compensation is carried out.

12. Method in accordance with Claim 11, characterized by the fact that the leak compensation is carried out dynamically.

13. Method in accordance with any of Claims 1 to 12, characterized by the fact that a determination of the spontaneous respiratory behavior is performed by the evaluation unit (14).

14. Method in accordance with any of Claims 1 to 13, characterized by the fact that the evaluation unit (14) compensates the effects of spontaneous respiratory behavior on the ventilation.

15. Method in accordance with any of Claims 1 to 14, characterized by the fact that leak detection is carried out in an area between a ventilator (7) and a patient (13).

16. Method in accordance with any of Claims 1 to 15, characterized by the fact that the measurements are carried out only during inspiratory phases of the respiratory cycles.

17. Device for detecting leaks in respiratory gas supply systems, which has both a device for detecting the pressure of a respiratory gas and a device for detecting the volume flow of the respiratory gas, and in which the detection devices are connected to an evaluation unit, characterized by the fact that the evaluation unit (14) is designed to determine the respiratory quantities pressure and flow, that a storage device is provided for at least one pair of value sequences of pressure and flow for a respiratory cycle, and that at least one differential sequence can be generated for determining differential curves of compliance and resistance for at least two successive respiratory cycles.

18. Device in accordance with Claim 17, characterized by the fact that at least one pressure sensor (8) is connected to the evaluation unit (14).

19. Device in accordance with Claim 17, characterized by the fact that at least one volume flow sensor (9) is connected to the evaluation unit (14).

20. Device in accordance with any of Claims 17 to 19, characterized by the fact that at least one of the sensors (7, 8) is arranged so that it faces a ventilator (7) that is supplying the respiratory gas.

21. Device in accordance with any of Claims 17 to 20, characterized by the fact one of the sensors (8, 9) is arranged so that it faces a ventilation mask (12).

22. Device in accordance with any of Claims 17 to 21, characterized by the fact that an expiration valve (11) is arranged so that it faces the ventilation mask (12).

23. Device in accordance with any of Claims 17 to 21, characterized by the fact that a discharge system (27) is arranged so that it faces the ventilation mask (12).

24. Device in accordance with any of Claims 17 to 23, characterized by the fact that a discharge system (27) is arranged so that it faces the ventilator (7).

25. Device in accordance with any of Claims 17 to 23, characterized by the fact that an expiration valve (11) is arranged so that it faces the ventilator (7).

26. Device in accordance with any of Claims 17 to 25, characterized by the fact that a patient interface that is connected with the ventilator (7) by the respiratory gas hose (10) is designed as an invasive device.

27. Device in accordance with any of Claims 17 to 25, characterized by the fact that a patient interface that is connected with the ventilator (7) by the respiratory gas hose

(10) is designed as a noninvasive device.

28. Device in accordance with any of Claims 17 to 27, characterized by the fact that the evaluation unit (14) has an amplitude generator for a pressure that varies from respiratory cycle to respiratory cycle.

29. Device in accordance with any of Claims 17 to 27, characterized by the fact that the evaluation unit (14) has an amplitude generator for a volume flow that varies from respiratory cycle to respiratory cycle.